

Candolle, Prof. Deissmann, Prof. Yves Delage, Dr. Anton Dohrn, Prof. A. Giard, Prof. H. Höfding, Prof. F. Hueppe, Prof. Jensen, Prof. Lombroso, Prof. Matsumura, Prof. Mendeléeff, Prof. Menschutkin, Prof. Hugo Münsterberg, Prof. W. Ostwald, Prof. Giuseppe Veronese, Prof. Paul Vinogradoff, Prof. J. W. Wijhe, and Prof. Weichselbaum. The lecture-rooms, laboratories, and other buildings which will be opened by the King to-day have cost more than 200,000*l.* to erect and equip. The new block completes the quadrangle, and includes new class-rooms and laboratories for physiology, geology, and agriculture; new rooms for education, medicine, modern languages, and other subjects; a new library for scientific literature, and new offices. We hope to give in our next number a description of this extension of the University, and an account of the brilliant ceremonies with which it has been inaugurated.

THE next session of the South-Eastern Agricultural College, Wye, will commence on October 1, and the inaugural address will be delivered by Dr. H. E. Armstrong, F.R.S., on October 2. A conference of fruit growers will be held at the college on October 22, when discussions on methods of planting, fungus diseases, insect attacks, strawberry culture, will be opened by Messrs. S. U. Pickering, F.R.S., E. C. Salmon, F. V. Theobald, and W. P. Wright. The chair will be taken by Mr. Laurence Hardy, M.P. Those wishing to attend the conference should send their names to the principal of the college.

ON October 11 Sir William Anson will distribute the prizes awarded to students in the evening classes of the Royal Technical Institute, Salford. The calendar of the institute for the session 1906-7 contains the announcement that all intending students under sixteen years of age will, before admission to the evening classes, be required to pass an entrance examination in elementary mathematics and English, or to satisfy the principal that they possess the requisite preliminary knowledge. Those who do not possess the knowledge necessary to pass the entrance examination are recommended to join one of the evening schools which have been instituted in various parts of Salford, and at which the required preparation is provided. It is intended that next year all under seventeen years of age shall furnish evidence of the possession of the requisite preliminary knowledge.

In the early days of the movement for the higher education of women, one of its most active workers was Mrs. William Grey, whose death on September 19 at the advanced age of ninety years was announced in the *Times* of September 21. Mrs. Grey's name was from the first well known among those who advocated and carried to a successful result the foundation of high schools for girls by combined private effort; and the Girls' Public Day School Company (Ltd.) was the outcome of this movement. Springing out of the needs presently revealed by the high schools came the establishment of a system of training for secondary teachers. The idea was then comparatively new in England, and public opinion on the subject had to be formed and fostered, as it was largely through the work of Mrs. Grey. In recognition of her labours the well-known Maria Grey Training College for Women, now situated at Brondesbury, was named after her.

AN inspiring address on educational methods and their relation to science and industry, with particular reference to pottery, was delivered by Prof. H. E. Armstrong in the Town Hall, Longton, on September 19. In the course of his remarks, he said that workers in science have evolved a method, the scientific method, involving the gradual and cautious passage from the known to the unknown. Workers in politics have no such method at their disposal. Too often they are more or less ignorant of the real nature and extent of the problems which they deal with and seek to solve; sentiment masters their actions. The application of scientific method to public affairs is, consequently, becoming a matter of paramount importance. In all manufacturing districts science and industry must be brought into an effective alliance. On no other basis are prosperity and happiness possible, for the simple reason that, in these

days, an industry that does not repose on a scientific basis is one which has no proper knowledge of itself, science being nothing more than organised systematic knowledge. Scientific training, training in method, is required by all. Scientific knowledge, true knowledge, must be public possession. The feeling is becoming general that something must be done to make our schools more effective than they are. In a recent report of the Consultative Committee, the Board of Education is advised that the schools have failed, in the past, to develop both the moral and mental qualities which are desirable, and that we must now strive to make the teaching far more practical, manual training being openly and strongly advocated. We read, moreover, "It would seem clear to the committee that the thing needed is not only knowledge, but a right attitude of mind, a mind confident in its own power to observe and think, and in the habit of observing and thinking—a mind in which interest makes for intelligence and intelligence for interest." "The course," it is stated, "should consist of three threads or strands, roughly to be termed humanistic, scientific, and manual, and, in the case of girls, domestic; all higher elementary schools should give this threefold instruction." Though these views have been urged by many educational reformers for thirty years or more, the doctrine they involve is really quite revolutionary coming from such a quarter, especially as it is directed to the Board of Education, which treats manual training as a special subject for the select few.

SOCIETIES AND ACADEMIES.

LONDON.

Royal Society, December 14, 1905.—"Observations on the Development of *Ornithorhynchus*." By Prof. J. T. Wilson and Dr. J. P. Hill. Communicated by Sir William Turner, K.C.B., F.R.S.

The paper treats of certain stages in the intra-uterine development of the egg of *Ornithorhynchus*. The following are points of more special interest among those set forth in the extended paper:—

(a) The very early differentiation of the layer of yolk-entoderm surrounding the yolk-mass of the monotreme egg.

(b) The original entire independence of the primitive streak from the primitive knot and its "gastrulation-cavity."

(c) The subsequent intimate approximation of these structures.

(d) The early appearance of an area of special differentiation in the vicinity of the primitive streak in the early blastoderm, and the later conversion of this "primitive-streak-area" into an "embryonic area" proper, by the annexation of the region surrounding the "primitive" or "archenteric" knot.

(e) The precise mode of disappearance of the ventral wall or floor of the archenteric- or invagination-cavity.

(f) The occurrence of peculiar segmental cell-masses in the substance of the "primitive knot," where that constitutes the parietes of an archenteric canal or its representative.

(g) The diagrammatically clear demonstration of various features of neural development, including the well-marked neuromeric segmentation of the cephalic region of the flattened medullary plate, the differentiation of early plate-like ganglionic expansions of the neural crest in the cephalic region, the presence of various cellular connections between the cephalic ganglionic plates and certain of the neuromeric segments of the medullary plate.

(h) The relative insignificance of the "archencephalic" subdivision of the cephalic portion of the medullary plate, from which the fore-brain and most, if not all, of the mid-brain are derived.

June 28.—"Note on the Production of Secondary Rays by α Rays from Polonium." By W. H. Logeman. Communicated by Prof. J. J. Thomson, F.R.S.

The author describes results which were obtained in the course of some experiments on the slowly-moving negative

or δ rays emitted by polonium, and which indicate that negatively charged secondary rays are produced when an aluminium or copper plate is bombarded by a stream of α rays.

The method used may be briefly described as follows:—A polonium-coated copper disc was placed in a glass tube with its active side facing, and parallel to, a highly insulated metal disc of the same size, which could be connected to one pair of quadrants of a sensitive Dolezalek electrometer. The distance between the discs could be adjusted. The polonium disc could be raised to any required potential by connecting it to a battery of small secondary cells. The glass tube was evacuated by means of a mercury pump down to a pressure of about 0.001 mm. and then sealed off, and the vacuum was then rendered as high as possible by the use of Dewar's method. The apparatus was placed between the poles of an electro-magnet in such a manner that a magnetic field could be applied in a direction at right angles to the straight line joining the centres of the discs. The charge acquired in a given time by the insulated disc, when different strengths of magnetic field were applied, and when the electric field between the discs had different values, was measured. Tables of results are given, and these are also plotted in the form of curves, showing the variation of the current between the discs with varying magnetic and electric fields. From the results obtained the author arrives at the following conclusions:—

(1) That under ordinary conditions, *i.e.* when not acted upon by an electric or magnetic field, the polonium gives off a larger amount of negative than of positive rays.

(2) Under the influence of a gradually increasing electric field more and more of the slowly-moving negative rays are stopped, and the charge carried by the α rays becomes more and more predominant.

(3) A potential difference of about 10 volts between the plates is sufficient to stop the last of the δ rays.

(4) The slowly-moving negative rays can also be prevented from striking the insulated plate by curling them up in a magnetic field. When they are stopped in this latter way, however, the quantity of positive electricity received by the insulated plate is only about one-fifth of that received when an electric field is used to stop the δ rays. The author explains this last fact as follows:—When the potential difference between the two plates is 10 volts or more (the polonium being positive), the positive current from the polonium to the other plate consists of two parts, *viz.* a stream of positive α particles in the direction of the current, and a stream of negative particles in the opposite direction given off by the insulated plate. A magnetic field curls up this latter stream of negative rays, as well as the δ rays given off by the polonium.

The author also points out that his results showing the magnetic and electric deflection of the δ rays are not in agreement with those obtained by Ewers with another sample of polonium.

PARIS.

Academy of Sciences, September 17.—M. Troost in the chair.—The International Congress for the Study of the Polar Regions: G. Bigourdan. The congress was held at Brussels on September 7, and was attended by delegates representing fifteen countries and eighty learned societies. Seven standing committees were formed, each concerning itself with a special group of sciences. The formation of an International Polar Commission was decided upon, and bye-laws drawn up.—The deviations from the vertical in the region of the Sahel, Algeria: R. Bourgeois. In the triangulation of Algeria, the summit of the Voirol column was taken as the junction of the network of triangles. The national observatory, founded some years later, is about 5 kilometres in a direct line from this column. If the astronomical latitude of the observatory is compared with the geodesic latitude of the same point, the calculation being made starting with the fundamental coordinates of Voirol, a relatively considerable discrepancy is found, indicating a strong deviation from the vertical at one or other of these two points. In the present paper it is shown that it is the Voirol station which is at fault, and hence all the data built on this as a starting point require

re-calculation.—The action of fluorine on chlorine, and on a new method of formation of hypochlorous acid: Paul Lebeau. Attempts were made to combine fluorine with chlorine, under varying conditions, at temperatures ranging from 0° C. to -80° C. It was found that fluorine and chlorine do not combine directly. Liquid chlorine dissolves fluorine, but this fluorine is given off at the solidifying point of the chlorine. In presence of water, fluorine oxidises chlorine, the latter being completely converted into hypochlorous acid, thus giving a new method for the preparation of this acid.—Syntheses in the quinoline group: phenyl-naphthoquinoline dicarboxylic acid and its derivatives: L. J. Simon and Ch. Mauguin.—The action of mixed organomagnesium compounds upon amides: Constantin Béis. To secure a reaction in all cases it is necessary to prepare the organomagnesium compound in the presence of the imide, the alkyl halide being added to a mixture of the imide, magnesium, and ether. Iso-indolinones, isomeric with arylamidoketones, are obtained.—The hæmopoietic activity of the different organs in the course of the regeneration of the blood: Paul Carnot and Mlle. Cl. Deflandre.—The experimental infection of trypanosomiasis by naturally infected *Glossina palpalis*: L. Cazalhou. Two out of seven specimens of *Glossina palpalis*, captured on the banks of the river Bani, a large tributary of the Niger, have infected dogs with trypanosomiasis. A cat was similarly infected.—The movement of the pole at the surface of the earth: Marcel Brillouin. A discussion of the curves published by M. Albrecht since 1890.

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